LOWPASS ON/OFF
Pushing this button "IN" engages the Lowpass filter. Pushing this button "OUT" will bypass the filter.

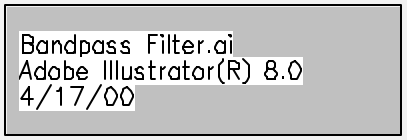
LOWPASS FREQUENCY
Turning this control sets the Lowpass crossover point from 50Hz (fully counterclockwise) to 5kHz (fully clockwise).

HIGHPASS FREQUENCY
Turning this control sets the Highpass crossover point from 50Hz (fully counterclockwise) to 5kHz (fully clockwise).

HIGHPASS ON/OFF
Pushing this button "IN" engages the Highpass filter. Pushing this button "OUT" will bypass the filter.

X-OVER OUT
This crossover is fully independent. Signal can be parallel routed from the CH 1/2 INPUTS (X-OVER INPUT SELECT button set to the "IN" position) or be directly sent to this crossover via the AUX. X-OVER INPUT RCA jacks (X-OVER INPUT SELECT button set to the "OUT" position). This configuration allows the AUX. crossover to be used with a separate amplifier not equipped with its own on-board crossover for the ultimate in system flexibility.

Note: By engaging both Highpass and Lowpass filters and setting the desired crossover points, a Bandpass filter can be created:



AUXILIARY CROSSOVER

Signal can be routed from the channel 1/2 INPUTS (X-OVER INPUT SELECT button set to the "IN" position) or combined with the CH 3/4 INPUTS (X-OVER INPUT SELECT button set to the "OUT" position).

These signals can then be processed by the third (AUXILIARY) crossover. This additional independent crossover can be used with a separate amplifier not equipped with its own on-board crossover for the ultimate in system flexibility.

D7 CROSSOVER FREQUENCIES

Diamond Audio *D7 Professional Reference Series Amplifiers* feature fully variable crossovers. The frequency control knobs (located in the tray on the top of the amplifier) are labeled 50Hz when the knob is rotated fully counter-clockwise (left) and 5kHz when rotated fully clockwise (right).

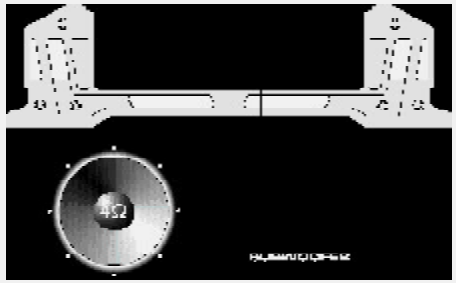
To make basic setting of the crossover frequencies a little easier, we've come up with the following rotational diagram:

HIGHPASS/LOWPASS FREQUENCY

Notice that the outer most circle of numbers (1:00, 2:00, etc.) represent numbers as they appear on the face of a clock. The number underneath each "hour" designation on the simulated clock face is the *approximate* crossover frequency at that position.

BRIDGING

All pairs of Diamond Audio D7 amplifier channels are capable of being bridged to a 4 Ohm mono output. Creation of the mono channel is accomplished by using the *left channel positive (+)* output connection of the amplifier for the speaker positive and the *right channel negative (-)* output connection of the amplifier for the speaker negative.



Note: It is important that a 4 Ohm minimum total speaker impedance load is observed! If an impedance load of less than 4 Ohms is used, you will eventually damage your amplifier and void your warranty.

RCA INPUTS AND OUTPUTS

As seen in the above drawing, the function of the RCA inputs, outputs, and feature buttons are as follows:

CH 1/2 INPUT
The RCA cables from your source unit should be inserted here.

-12dB BUTTON: CH 1/2
To the right of the CH 1/2 INPUT RCAs you will find the -12dB button. Pushing this button: "IN" allows your amplifier to accept signal voltages as high as 12VRMS. Pushing this button "OUT" configures the amplifier to accept signal voltages up to 6VRMS.

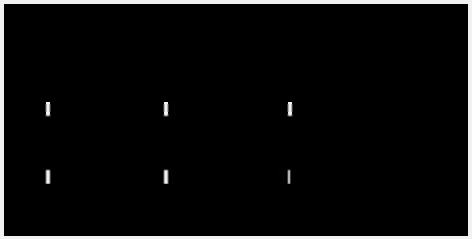
AUX. X-OVER INPUT
These RCA jacks allow you independent access to the AUX. X-OVER.

X-OVER INPUT SELECT
Pushing this button "IN" routes signals from the CH 1/2 INPUTS to the inputs of the AUX. X-OVER. Pushing this button "OUT" allows independent access to the AUX. X-OVER.

AUX. X-OVER OUT
These RCA outputs are used to provide filtered or unfiltered signals to an outboard processor or amplifier.

By pushing the X-OVER INPUT SELECT button to the "IN" position, and pushing the LOWPASS ON/OFF and HIGHPASS ON/OFF crossover buttons to the "OUT" position, signals available at the CH 1/2 INPUTS will bypass the crossover and be made available at the AUX. X-OVER OUTPUT RCAs allowing you to "daisy-chain" multiple D7 amplifiers for the ultimate in system design flexibility (see block diagram page 16).

Note: To set crossovers, first remove the two 1/16" Allen screws holding down the security cover using the Allen key provided. When reinstalling the cover be careful not to overtighten the screws. Damage to the cover may result.



CROSSOVER CONTROLS: CH 1/2
As seen in the above drawing, the function of the crossover controls (from left to right) are as follows:

GAIN
This control matches the output voltage of the source unit or processor to the amplifier inputs. Rotating this control to the "MIN" mark (counterclockwise) configures your D7 amplifier to accept input voltages as high as 12V RMS with the -12dB button pushed "IN" (see "RCA INPUT" drawing on page 12). This control should be set as low as possible. The basic procedure for setting input gains is as follows:

1. Adjust all amplifier gain controls to just above the minimum setting (fully counterclockwise). If your source unit output voltage is *less* than 6 Volts RMS, push the –12dB button for the selected channel pair to the "OUT" position. If the available signal voltage is *more* than 6 Volts RMS, push the -12dB button to the "IN" position.
2. Using the highest quality source (usually CD) play some music and slowly turn up the source unit until you can hear distortion. Now turn down the volume until the distortion stops. This is your maximum source unit level.
3. Turn up the amplifier gain until audible distortion starts. Turn down the gain to the point JUST BELOW the start of the distortion.
4. Repeat step 3 for all amplifiers in your system.

Please refer to the Diamond Audio Level Setting Technical Brief available from the Tech Department for a comprehensive level setting procedure.

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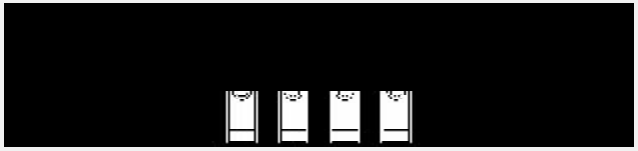
SPEAKER WIRING

Diamond Audio recommends using speaker wire of at least 16 gauge. Lay out the wire in the vehicle from the individual speaker locations to the amplifier(s). Observe safe wiring precautions.

Your *D7 Professional Reference Series Amplifier* will accept speaker wire up to 10 gauge directly. Locate the speaker terminal block on the end of the amplifier. Strip approximately 1/2 inch of insulation from the wire, insert the wire into the terminal, and tighten the Allen screw. Repeat for all speaker wires. Please observe our recommended minimum speaker impedances to prevent possible damage.

Banana Jacks using up to 8 gauge wire can be inserted into the speaker block. Remove the set screw completely and insert the Banana Jack into the end of the block.



CROSSOVERS

All Diamond Audio D7 amplifiers employ the most flexible internal crossover sections currently available in mobile audio. They feature third-order 18dB/ octave Butterworth filters. These filter networks sum to a flat response at their -3dB break points. This results in a smooth and seamless transition from one frequency band to the next. Butterworth filters provide maximally flat frequency responses when compared to other filter structures.

All crossover controls are mounted on the top of the amplifier. Each crossover is continuously variable from 50Hz to 5kHz. Each pair of channels has an individual network that can be configured to Highpass, Lowpass, Bandpass or All-pass by simple switch selection. When switched off, they are completely out of the audio path.

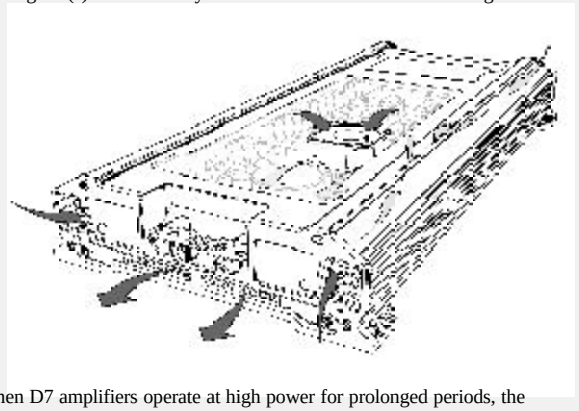
Two and four-channel D7 amplifiers also provide a separate fully-independent crossover for the output RCA jacks providing filter control of any other amplifier.

THERMAL MANAGEMENT SYSTEM

All *D7 Professional Reference Series Amplifiers* feature our *Intelligent Thermal Management System*. All amplifiers feature one or two (depending on model) internally mounted temperature-controlled cooling fans.

Care should be taken to allow adequate “breathing room” (approximately 2 inches) on all sides of the installed amplifier to allow the system to operate at peak efficiency.

Cool outside air is drawn into the amplifier through the side vents on each end panel. The air is then drawn over the top of the main circuit board, down through the fan over the internal heat sink fins (in two directions) and out through exhaust vents on the bottom of each end panel. In this way, the cooling fan(s) remain nearly inaudible under almost all listening conditions.



When D7 amplifiers operate at high power for prolonged periods, the temperature sensors instruct an intelligent monitoring circuit to speed up the fan(s) until the amplifier has cooled down to its normal operating temperature.

Amplifier models D7402 and D7104 also feature our unique Power-Flow Busbar. The shroud connecting and covering the two internal cooling fans of these amplifiers is made of solid nickel-plated copper. Each end of this fan shroud is soldered to full width pads on the main circuit board. The center of this shroud is attached to the fans at eight points. The high current ground path for the speakers now travels over the cooling fans through the shroud, which functions as a busbar. At the same time, these high current signals are completely isolated from the circuit board traces that carry low-level signals.

An additional temperature monitoring circuit protects the D7 amplifier under extreme high power or extreme high-ambient temperature conditions. As the heat sink temperature reaches 185 degrees Fahrenheit, this circuit gradually turns down the high-current rail voltages, reducing the amplifier power dissipation. This circuit only effects the high current stage of the power supply; the operation of the sensitive low current audio circuits remain unchanged. Only the maximum output power is affected, and only until the heat sink cools down. Under no conditions will the D7 Series amplifiers have to shut off completely.

If a problem arises, refer to the troubleshooting section (page 15) or call the Diamond Audio Technical Department at (480) 813-6205 for assistance.

A WORD ABOUT BATTERIES AND HIGH OUTPUT ALTERNATORS...

The battery in your car is a chemical storage device for electrical energy generated by the alternator. It is capable of briefly supplying high currents for cold starting the vehicle as well as powering other important electrical loads either partially or entirely for a limited period when the engine is off.

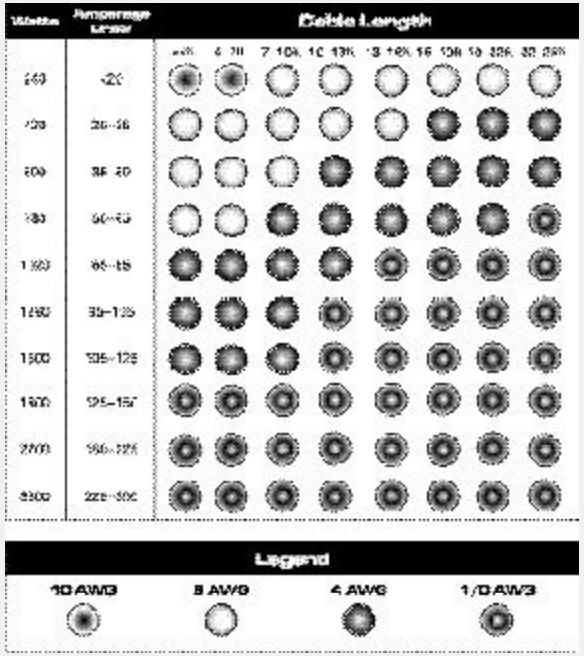
In order to supply the power required for ignition, lighting, large audio systems etc. a car needs its own efficient, reliable, and constantly available source of energy. When the engine is stopped, the battery is the vehicle's energy source. When the engine is running, the alternator is the on-board "electricity generating plant." It is the job of the alternator to supply power to all current-consuming loads (including the audio system).

Alternator output, battery capacity, and power demand of all electrical loads and systems must be matched as ideally as possible so the entire system is reliable and trouble-free in operation.

In the most basic of terms, this means that car audio is gasoline powered. Extra batteries are primarily for the extended operation of your audio system when the engine is off or for SPL competitions where high sound pressure levels are generated for short periods of time and large battery racks are needed to provide the necessary current demanded by the many amps used.

D7 Professional Reference Series Amplifiers are capable of reproducing "concert level" volumes with incredible accuracy. Care must be taken to ensure that your vehicle is capable of supplying the voltage and current required by such a system.

POWER CABLE GAUGE CHART



Note: If you are installing multiple amplifiers, add up the total current draw for all of them and choose the appropriate gauge based on the grand total. Example:

Amplifier 1: D7054 (driven at 4 ohms)	=	33	amps
Amplifier 2: D7152 (driven at 4 ohms)	=	50	amps
Amplifier 3: D7152 (driven at 4 ohms Bridged)	=	100	amps
Grand Total	**=**	**183**	**amps**

TURN-ON CONNECTION (REMOTE)

Locate the terminal labeled "REMOTE" between the ground and +12V power connection points on the end of the amplifier. Your source unit should have a wire in its harness labeled "REMOTE" or "AMP TURN-ON." Some source units come equipped with a "Power Antenna" lead only. This should also work. Run this wire from your source unit to the amplifiers REMOTE connection. Strip approximately 1/2 inch of insulation from the wire. Insert the wire into the terminal, and tighten the Allen screw. Your *D7 Professional Reference Series Amplifier* will accept remote turn-on wire up to 10 gauge directly.

A WORD ABOUT POWER AND GROUND CABLE GAUGE...

The following basic formula can be used as a quick guide to determine the total amperage draw of a mobile audio system. This formula is based on a 50% amplifier efficiency rating. Diamond Audio D7 amplifiers are more efficient. Others may be less. Using cable of a larger gauge will only increase the current capability of your system. Do not use cable of a smaller gauge than suggested here.

FORMULA:
Total amplifier rated RMS power x 2 = Total Input Wattage

$$\frac{\text{Total Input Wattage}}{\text{Battery Voltage}} = \text{Current Draw (in Amps)}$$

EXAMPLE:
An D7152 amplifier has 2 channels at 150 Watts per channel RMS into 4 Ohms totaling 300 Watts. Work the formula as follows:

300 Watts x 2 = 600W

$$\frac{600W}{12V} = 50A \text{ Total Current Draw}$$

If the same amplifier is being driven to a 2 Ohm stereo or a 4 Ohm mono load, double the total wattage number:

(D7152 = 600W @ 4 Ohms Mono) x 2 = 1200W

$$\frac{1200W}{12V} = 100A \text{ Total Current Draw}$$

If you are considering a high output alternator or if you are not sure if your vehicle's charging system needs to be upgraded, consult your Authorized Diamond Audio Dealer. They will be happy to set you up with everything necessary for you to enjoy a listening experience in your vehicle without equal.

BASIC TROUBLESHOOTING

1. **Amplifier has no output.**

   Is LED (located on power/ground endpanel) lit?

   Yes: Make sure audio signal is present at RCA inputs. If no signal is present, use alternate signal source and try again. If signal is present, check configuration of crossovers. If still no signal, contact your authorized dealer.

   No: Check power, ground and remote wire for +12V. Verify all connections. If voltages are correct and still no LED, contact your authorized dealer.

Note: The following steps apply to each pair of channels on your amplifier.

2. **Sound in one channel only.**

   Reverse left and right RCA cables at amplifier inputs. Is the sound now in the opposite channel?

   Yes: Reverse the input RCA cables in every product installed BEFORE your amplifier until the problem is found. Check RCA cables for open connections. Repair as necessary.

   No: Check the speaker or speaker wires of the dead channel and repair as needed. If speaker and wire are OK, contact your authorized dealer.

3. **One or more pairs of amplifier channels "squeal" when operating.**

   One or more speaker wires are shorted or one or more speaker voice coils are shorted or rubbing. If speakers and wires are OK, contact your authorized dealer.

4. **Amplifier volume gets gradually softer as music is playing without touching any system controls.**

   Amplifier is going into thermal protection. Make sure amplifier has room for fan(s) to breathe. Preventing air from reaching the heatsink will cause the amplifier to overheat, as will running the amplifier at too low of an impedance.

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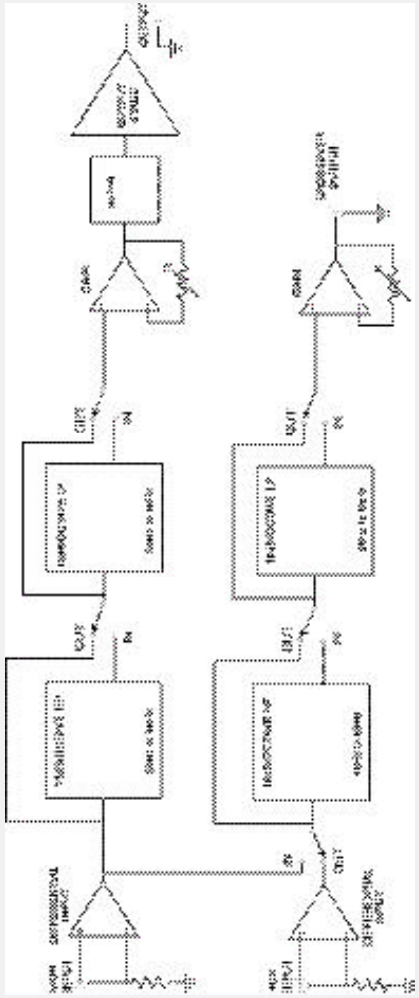
AMPLIFIER BLOCK DIAGRAM (D7152 AND D7402)



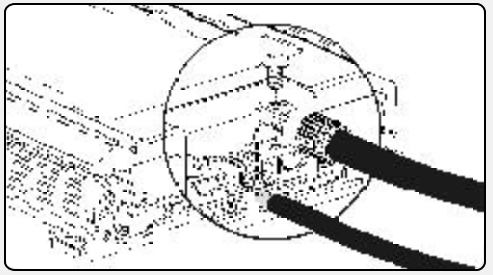
to the bare metal using a bolt, star washer and nut. Seal the area from above and below to prevent rust. Strip approximately 1/2 inch of insulation from the other end of the cable and insert it into the ground block on the amplifier and tighten the Allen screw.

ENDPLATE DIAGRAM (POWER/GROUND REMOTE)

For multiple amplifier systems, a ground distribution block is recommended. Cut a length of cable long enough to go from the ground distribution block to the amplifier. Strip approximately 1/2 inch of insulation from each end of the ground cable. Insert one end into the ground distribution block and tighten the Allen screw. Insert the other end of the cable into the ground block on the amplifier and tighten the screw (A ring terminal may be used here). Repeat for each amplifier installed. Run a cable (the same gauge as the main power cable) from the ground distribution block to the negative terminal of the system battery.

Your *D7 Professional Reference Series Amplifier* is designed to accept up to 4 gauge power and ground cable when using the Direct (stripped wire end) Connection method.

When using ring terminals to attach the power and ground, cables of up to 1/0 gauge can be used. Please refer to the Power Cable Gauge Chart (page 7) for the minimum recommended wire gauge.



warranty. Mounting your amplifier inside an enclosure is not a good idea unless the enclosure is equipped with ventilation fans to circulate fresh air through the enclosure.

Your new D7 amplifier features adjustable mounting flanges. Should they need to be moved to a different location, remove the self-tapping screws on the bottom of each mounting flange. Move the flange to the desired location. Carefully tighten the self-tapping bottom screws. Be careful not to overtighten these screws or damage to the head of the screws or stripping of the threads will result.

POWER/GROUND

D7 amplifiers need proper power and ground connections to deliver maximum performance and efficiency. This is typically the least understood part of the installation process. Voltage drops due to poor quality connections and/or poor grounding practices will rob your audio system of power that could be used for listening to music. These voltage drops will create increased current draw and will make it easier for noise to enter your system.

Your new amplifier has a fully regulated power supply. It is designed to make full power even if the voltage changes. It will draw more current at lower voltages to make that power. Try to ground your system to a single point in the vehicle.

The gauge of the power and ground cables must be capable of handling the current needed by the entire system. Power and ground cables must be of the same gauge. If the alternator is not capable of supplying enough power for both the vehicle AND the audio system, a high output alternator should be installed for best performance.

POWER (+12V)
Strip approximately 1/2 inch of insulation from the end of the power cable going to the amplifier. Insert the stripped cable into the power block on the end of the amplifier and tighten the Allen screw. A ring terminal may also be used directly at the power block. Repeat for each amplifier installed.

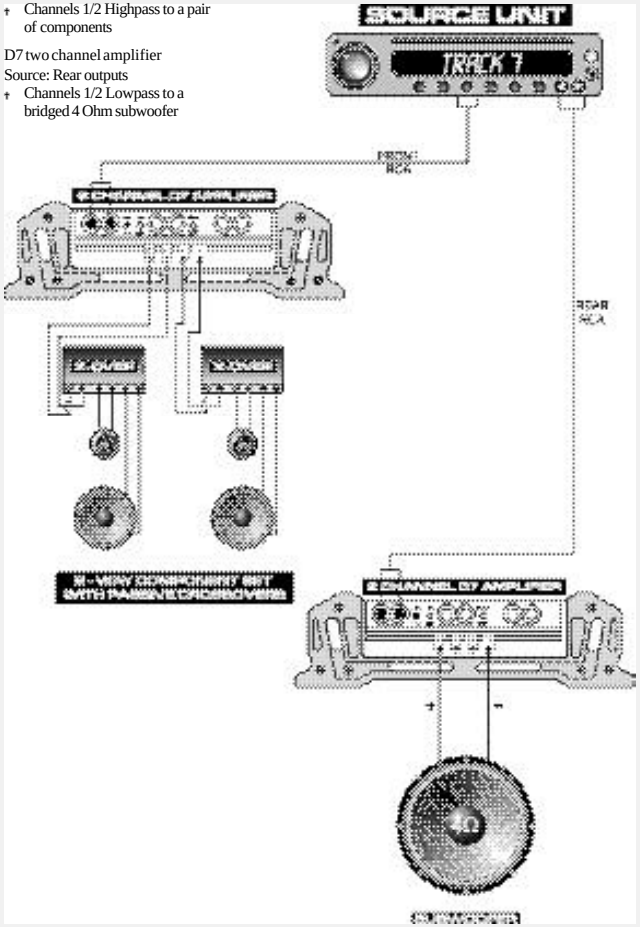
GROUND
For low power systems, locate a fairly thick metal area near the amplifier(s). Inspect around and under the chosen area to make sure you won't drill into wires, brake or fuel lines, computers, etc. Remove any paint and carpet glue to a spot approximately 1 inch in diameter. Drill a hole into the middle of this area. Cut a length of ground cable long enough to go from the ground point to the amplifier. Terminate the ground cable with a ring connector and attach it

SYSTEM DIAGRAM 1

Basic Biamp System:
Dual 2 Channel Amplifiers

D7 two channel amplifier
Source: Front RCA outputs
- Channels 1/2 Highpass to a pair of components

D7 two channel amplifier
Source: Rear outputs
- Channels 1/2 Lowpass to a bridged 4 Ohm subwoofer



SYSTEM DIAGRAM 2

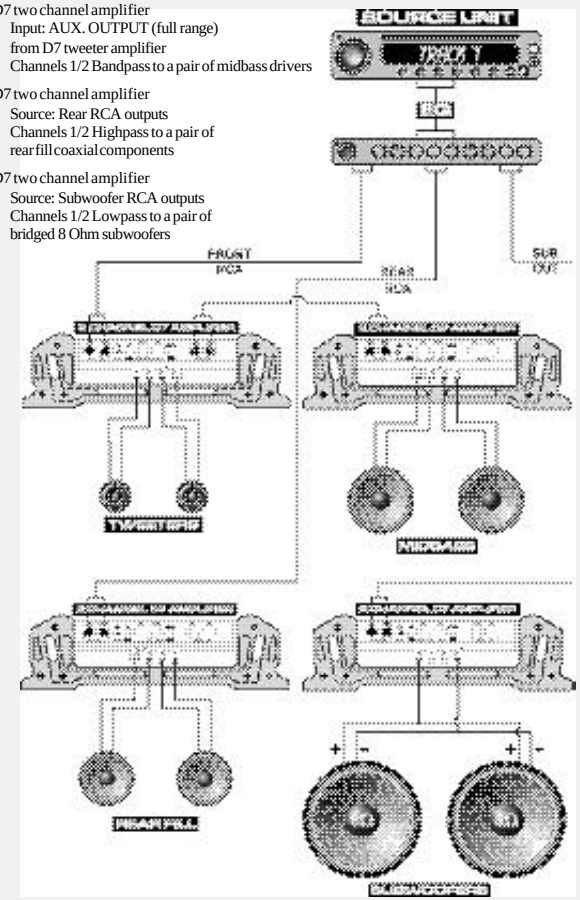
Four Channel System with Subwoofer and Biamplified Front Stage

D7 two channel amplifier
- Source: Front RCA outputs
- Channels 1/2 Highpass to tweeters
- AUX. OUTPUTS to 2nd D7 amplifier

D7 two channel amplifier
- Input: AUX. OUTPUT (full range) from D7 tweeter amplifier
- Channels 1/2 Bandpass to a pair of midbass drivers

D7 two channel amplifier
- Source: Rear RCA outputs
- Channels 1/2 Highpass to a pair of rear fill coaxial components

D7 two channel amplifier
- Source: Subwoofer RCA outputs
- Channels 1/2 Lowpass to a pair of bridged 8 Ohm subwoofers



INSTALLATION

TOOLS NEEDED FOR INSTALLATION
- 1/16" Allen Key (Included): Crossover Security Cover Top Screws
- 3/16" Allen Key: Up to 1/0 AWG Power Rings, Power / Ground
- 5/32" Allen Key: Up to 4 AWG Direct Input, Power / Ground
- 1/8" Allen Key: Up to 8 AWG Speaker and Remote Terminal (Also Accepts Banana Jacks)
- 7/64" Allen Key: Amplifier Mounting Flanges

A WORD ABOUT PROFESSIONAL INSTALLATION…

We, the folks at Diamond Audio, highly advise the use of a factory authorized installation technician. System performance ultimately depends on proper installation. Your D7 Series amplifier is an awesome component that deserves to be professionally installed. If this last-chance plea for dealer assistance doesn't sway you, the following instructions will make the installation of your new amplifier a little easier.

Before starting your installation, remove the negative battery cable before working on the positive terminal to prevent a short to ground. If a short does occur, current will continue to flow until the short is opened, the main fuse blows, or the wire melts (possibly taking out any nearby flammable object, wire loom, etc. causing a fire or possibly even a tear in the fabric of time and space). Reconnect the negative terminal after all connections have been made.

MOUNTING YOUR AMPLIFIER

WARNING — AMPLIFIERS GENERATE HEAT!
You can mount your amplifier in any position, even upside down. However, airflow must be maintained. Do not install your amplifier under carpets or behind airtight panels. Let the amplifier breathe. Without air circulation, your amplifier will reduce its power output to protect itself.

D7 Professional Reference Amplifiers utilize a forced-air cooling system. Care must be taken to provide a sufficient flow of air around the amplifier for the thermal management system to operate at peak efficiency. Air is drawn into the system along the sides of the amplifier, over the circuit board, through the bottom heat sink and is exhausted through the vents on the end panels. Be sure to allow at least 2 inches of space around the amplifier. Never mount your amplifier where it can get wet. Water damage is not covered by the

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CONTINUOUS RMS OUTPUT POWER

Note: Full Rated Power is generated at all voltages between 11 and 16VDC.

D7152	D7402
150W x 2 @ 4 Ohm Stereo	400W x 2 @ 4 Ohm Stere
300W x 2 @ 2 Ohm Stereo	800W x 2 @ 2 Ohm Stereo
600W Bridged @ 4 Ohms	1600W Bridged @ 4 Ohms
(minimum impedance)	(minimum impedance)

CROSSOVER SPECIFICATIONS

Quantity:	2 (1 for CH 1/2 INPUT, 1 for X-OVER OUT)
Type:	Fully Independent and Selectable Highpass, Lowpass, Bandpass or All-pass
Slope:	Third Order 18dB/Octave
Alignment:	Butterworth

FUSE RECOMMENDATIONS

D7 Professional Reference Series Amplifiers, by design, require external fusing. Research has shown that a circuit board mounted fuse can create a drop in available DC voltage at the input of the power supply resulting in increased current draw.

We recommend that you install the correct size fuse/holder combination to the main power cable within 18 inches of the battery. This will protect your vehicle from fire damage due to a short circuit to the chassis or vehicle body. If a single amplifier is installed, follow the fuse recommendation below. If installing multiple amplifiers, add up the total fuse ratings of all installed amplifiers. This should be used as your main fuse rating.

Amplifier	Maximum Fuse Rating
D7152	80
D7402	150

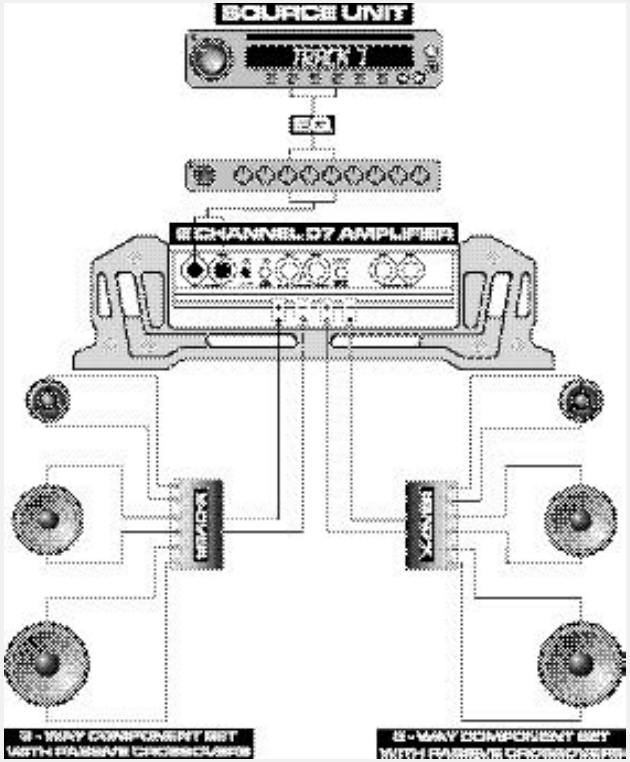
Note: A main fuse must be installed within 18 inches of the positive battery terminal.

SYSTEM DIAGRAM 3

Two Channel System
Using a Three-Way Component Set

D7402 two channel amplifier

- Channels 1/2 full range to a three-way component set with passive crossovers



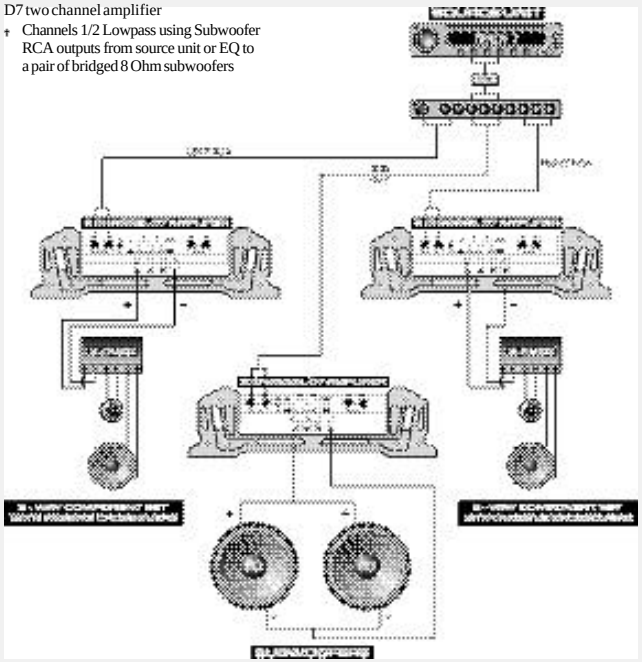
SYSTEM DIAGRAM 4

Two Channel System with Three Bridged Amplifiers

D7 two channel amplifier
- Channels 1/2 Highpass & Bridged to a component set using Front Left RCA and Rear Left RCA from source unit or EQ

D7 two channel amplifier
- Channels 1/2 Highpass & Bridged to a component set using Front Right RCA and Rear Right RCA from source unit or EQ

D7 two channel amplifier
- Channels 1/2 Lowpass using Subwoofer RCA outputs from source unit or EQ to a pair of bridged 8 Ohm subwoofers



FEATURES:

TECHNICAL
- Symmetrical Topology, Fully Regulated, Triple-Split-Rail Power Supply
- Isolated Input Section Utilizing "Quasi-Differential" Instrumentation Amplifier Technology
- Up To 12VRMS Input Signal Voltage Capability (With -12dB Attenuator)
- Third-Order 18dB/Octave Butterworth Crossover Topology
- Wide Bandwidth/Low Distortion Symmetrical Gain Output Stage
- 4 oz. (3 oz. on D7152) Gold Plated Copper Circuit Board
- High Efficiency Forced-Air Cooling System
- Massive 3-Piece Proprietary Heatsink
- Solid Copper High-Current Power Distribution Busbars

CONVENIENCE/APPEARANCE
- Two 3-Way Fully Variable and Independent Electronic Crossovers in Top-Mount Configuration with Supplied Plexiglass Security Cover (Separate Independent Crossover for RCA Outputs)
- 24-Karat Gold Plated Solid Brass, Circuit Board Mounted, 4 Gauge Direct or Ring Terminal Power/Ground Connector Blocks
- 24-Karat Gold Plated Solid Brass, Circuit Board Mounted, 10 Gauge Direct or Banana Plug Direct Speaker Connectors
- Tinted Plexiglas Circuit Board Viewing Panel
- Solid Billet CNC Machined End Panels with Adjustable Mounting Flanges

SPECIFICATIONS

Frequency Response:	3 – 50,000 Hz
Signal-to-Noise Ratio:	96dB (D7152), 102dB (D7402)
THD:	0.02%
Channel Separation:	80dB
Input Sensitivity:	.5 to 12VRMS
Input Impedance:	>40kOhms
Power Supply Operating Range:	10 to 16VDC

DIMENSIONS

D7152 Dimensions		D7402 Dimensions	
Length:	17 3/4"	Length:	24 3/4"
Width:	10 5/8"	Width:	10 5/8"
Height:	3"	Height:	3"

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